

carboxyl group, or an alkylsilyl or alkylsilylalkyl group having from 3 to 30 carbon atoms, and R's may be the same or different, and may be optionally bonded to each other to form a cyclic structure; a represents 0, 1 or 2; and n and m each represent an integer of at least 1.

14. (Amended) A method for producing olefin-styrene copolymers, which comprises polymerizing olefins and styrenes in the presence of the copolymerization catalyst of claim 1.

Please add new Claims 15-39.

15. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein, in (C), X is carbon, Y is oxygen and Z is aluminium.

16. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein the compound (C) is a reaction product of <1> at least one selected from compounds of a general formula,  $(R^1)_3-C-OR^3$ ,  $R^4-CO-R^5$  or  $R^6-CO-OR^7$ , with <2> a compound of a general formula,  $Z(R^2)_m$ . (In these formulae,  $R^1$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$  and  $R^7$  each represent a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group having from 1 to 30 carbon atoms, an aromatic hydrocarbon group having from 6 to 30 carbon atoms, an alkoxy group having from 1 to 30 carbon atoms, an aryloxy group having from 6 to 30 carbon atoms, a thioalkoxy group having from 1 to 30 carbon atoms, a thioaryloxy group having from 6 to 30 carbon atoms, an amino group, an amido group, or a carboxyl group, and  $R^1$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$  and  $R^7$  may be the same or different, and  $R^1$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$  and  $R^7$  may be optionally bonded to each other to form a cyclic structure; Z represents a metal element of Groups 2 to 13; m is an integer, indicating the valency of the metal element Z; and  $R^2$  represents a hydrocarbon group.)

17. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein at least one of three  $R^1$ 's is an aromatic hydrocarbon group having from 6 to 30 carbon atoms.

18. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein at least one of three R<sup>1</sup>'s is an aromatic hydrocarbon group having from 6 to 30 carbon atoms.

19. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein at least one of three R<sup>1</sup>'s is an aromatic hydrocarbon group having from 6 to 30 carbon atoms.

20. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein three R<sup>1</sup>'s are all aromatic hydrocarbon groups each having from 6 to 30 carbon atoms.

21. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein three R<sup>1</sup>'s are all aromatic hydrocarbon groups each having from 6 to 30 carbon atoms.

22. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein three R<sup>1</sup>'s are all aromatic hydrocarbon groups each having from 6 to 30 carbon atoms.

23. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein three R<sup>1</sup>'s are all phenyl groups.

24. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein three R<sup>1</sup>'s are all phenyl groups.

25. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein three R<sup>1</sup>'s are all phenyl groups.

26. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein R<sup>2</sup> is an alkyl group having at least 2 carbon atoms.

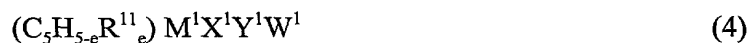
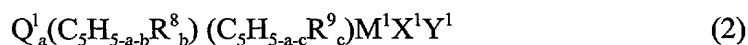
27. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein R<sup>2</sup> is an alkyl group having at least 2 carbon atoms.

28. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein R<sup>2</sup> is an alkyl group having at least 2 carbon atoms.

29. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein Z is aluminium.

30. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein Z is aluminium.

31. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein the transition metal compound (A) is represented by any of the following general formulae (2) to (6):



in which Q<sup>1</sup> represents a bonding group that crosslinks the two conjugated five-membered cyclic ligands (C<sub>5</sub>H<sub>5-a-b</sub>R<sup>8</sup><sub>b</sub>) and (C<sub>5</sub>H<sub>5-a-c</sub>R<sup>9</sup><sub>c</sub>); Q<sup>2</sup> represents a bonding group that crosslinks the conjugated five-membered cyclic ligand (C<sub>5</sub>H<sub>5-a-d</sub>R<sup>10</sup><sub>d</sub>) and the group Z<sup>1</sup>; R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> each represent a hydrocarbon group, a halogen atom, an alkoxy group, a silicon-containing hydrocarbon group, a phosphorus-containing hydrocarbon group, a nitrogen-containing hydrocarbon group, or a boron-containing hydrocarbon group; and a plurality of these groups, if any, may be the same or different, and may be bonded to each other to form a cyclic structure; a represents 0, 1 or 2; b, c and d each represent an integer of from 0 to 5 when a = 0, or an integer of from 0 to 4 when a = 1, or an integer of from 0 to 3 when a = 2; e is an integer of from 0 to 5; M<sup>1</sup> represents a transition metal of Groups 4 to 6 of the Periodic Table; M<sup>2</sup> represents a transition metal of Groups 8 to 10 of the Periodic Table; L<sup>1</sup> and L<sup>2</sup> each